

**Electronic Supplementary Information :**

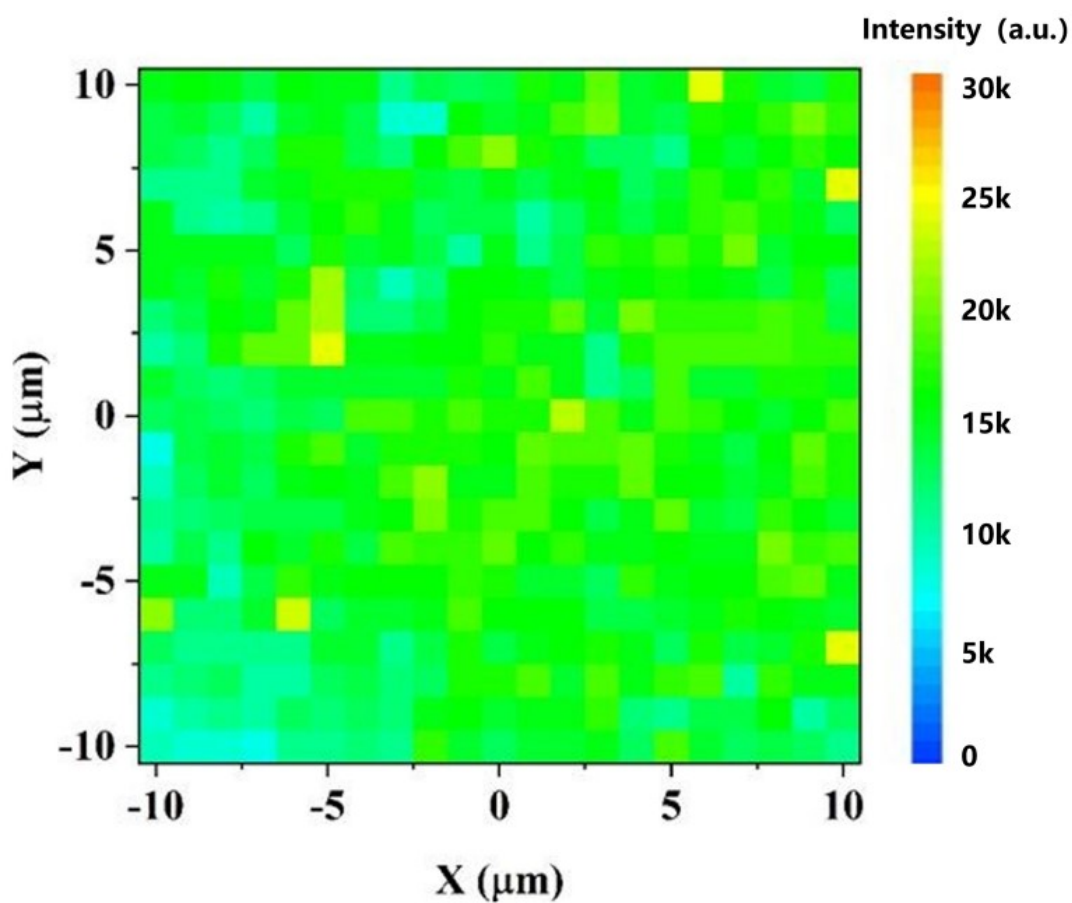
**Synergistic enhancement of Ag/ZIF-67 cage@Mxene 3D heterogeneous structure for ultrahigh SERS sensitivity and stability**

Yunpeng Shao,<sup>\*a</sup> Wenlong Deng,<sup>a</sup> Yue Niu,<sup>a</sup> Zicheng Zhang,<sup>a</sup> Jiwei Song,<sup>a</sup> Yuan Yao<sup>a</sup> and Linyu Mei<sup>a,b</sup>

a. School of Mechanical Engineering, North University of China, Taiyuan 030051, China.

b. Shanxi Key Laboratory of Ferroelectric Physical Micro-nano Devices and Systems , North University of China , Taiyuan 030051, China.

\*Corresponding author. E-mail addresses: \*shypeng@nuc.edu.cn



**Fig. S1.** Raman mapping image of R6G ( $1.0 \times 10^{-6}$  M) on the SERS substrate over a  $20 \mu\text{m} \times 20 \mu\text{m}$  area, centered at  $613 \text{ cm}^{-1}$  with  $1 \mu\text{m}$  step intervals and an exposure time of 1 s.